COMMONWEALTH OF VIRGINIA

Department of Environmental Quality
Division of Water Quality Programs
Ellen Gilinsky, Director

SUBJECT: Guidance Memo No. 06-2012
Review Procedures for WQIF Grant Applications and Agreement Negotiations

TO: Regional Directors

FROM: Ellen Gilinsky, Ph.D., Director 

DATE: September 13, 2006

COPIES: James Golden; Rick Weeks; CBP staff; CAP Staff; Regional WPM, OWPP Staff, OWE Staff

Summary and Background: The Water Quality Improvement Fund Point Source Program has become more complex due to amendments in the Water Quality Improvement Act (WQIA) and resulting changes to the Grant Guidelines issued by the Secretary of Natural Resources. Previously, the program provided 50% cost-share for voluntary installation of a single technology (Biological Nutrient Removal), with eligibility limited to just the portion of a project that went above and beyond permit requirements. The program now includes several new components, including:

- A range of cost-share percentages based on affordability and fiscal stress.
- A range of technology-based performance levels, from BNR to State-of-the-Art.
- Eligibility for POTWs installing nutrient reduction technology to comply with regulatory limitations for total nitrogen and total phosphorus in the effluent.
- Mandatory execution of a grant agreement with all eligible applicants, rather than limiting the number of grantees to available funds.
- Authorization for nutrient limits in VPDES permits, as well as enforceable provisions for performance requirements (with allowance for some exceedance) in the grant agreement.
- An option for suspension of concentration limits, if the facility is certified as “E3” or “E4” for that calendar year.

The purpose of this guidance is to assure use of a consistent and equitable decision making process in reviewing applications, prioritizing agreement drafting/negotiation, and determining eligible scopes of work and appropriate cost-share percentages.

Electronic Copy: An electronic copy of this guidance in PDF format is available for staff internally on DEQNET, and for the general public on DEQ’s website at http://www.deq.virginia.gov/bay/wqif.html.

Contact Information: Please contact John Kennedy, DEQ Chesapeake Bay Program, at (804) 698-4312 or jmkennedy@deq.virginia.gov with any questions regarding the application of this guidance.

Disclaimer: This document is provided as guidance and, as such, sets forth standard operating procedures for the agency. However, it does not mandate any particular method nor does it prohibit any particular method for the analysis of data, calculation of a WQIF cost share percentage, or establishment of an eligible scope of work. If alternative proposals are made, such proposals may be reviewed and accepted or denied based on their technical adequacy and compliance with appropriate laws and regulations.

Review Methodology and Procedures

The issues addressed by this review procedure include:

1. Prioritizing Applicants for Agreement Negotiations: The Director by law must sign a grant agreement with all eligible applicants for WQIF cost-share. Therefore, this prioritization is not a ranking relative to project merit, but rather is a ranking relative to timing. Applicants are grouped into four scheduling blocks according to "readiness-to-proceed", as follows:
    a. **Priority 1** = project under construction or acceptable Preliminary Engineering Report (PER) submitted. Grant agreement negotiations are underway with the initial applicants. PER review is occurring and individual face-to-face meetings are being scheduled to discuss: eligible scope of work, cost-share percentage, and grant administration.
    b. **Priority 2** = PER being drafted and expect submittal within a few months; relatively complete application with some additional information/clarification needed. "Town Hall" type meetings have been held at DEQ regional offices around the Bay watershed with discussions on general program management and administration procedures, information needs, and guidance on agreement negotiations that will begin once the PER is submitted. Expect individual agreement negotiations to proceed over fall 2006.
    c. **Priority 3** = similar status as Priority 2, but need for other regulatory actions to occur before PER can be drafted (e.g., permit modification to include a new design flow tier). Expect agreement negotiations to occur after winter 2006.
    d. **Priority 4** = status of PER unknown/not provided in application; major questions about project design capacity, nutrient effluent levels (especially proposals with limited, or no additional value/nutrient reduction gained for expenditure of grant funds). Expect agreement negotiations to occur during winter 2006/07.
    e. **Other** = includes applicants which were ineligible for funding (non-significant dischargers installing nutrient removal technology) at the time of the application but have since become eligible.

    Unless there are extenuating circumstances, grant agreements will be signed only after the applicant has submitted an acceptable PER to DEQ for review and approval. Applicants in Priority categories 2 thru 4 will be moved into Priority 1 upon submission of an acceptable PER.

    Future solicitations will be coordinated to the extent practicable to coincide with the annual application schedule used for the State Revolving Loan Fund Program.

2. Determining Appropriate Grant Percentage:
    a. The **basis for calculating the authorized cost-share percentage** is specified in the WQIA. Determinants include Median Household Income (MHI) figures, "reasonable" sewer cost and annual residential sewer charge current at the time of application for the service area. Any updates to MHI figures and calculated reasonable sewer costs will be used as soon as they are adopted by the SWCB.
    b. **Multi-jurisdiction service areas** – Where multiple jurisdictions receive sewer service through a District/Authority or an inter-municipal agreement, weighted averages of the median household income and sewer charge will be calculated for comparison to the "reasonable sewer costs." Staff will interpret these factors to be weighted according to the current conditions (e.g., portion of plant capacity presently used by each jurisdiction and location of residents served).

c. **Requests for cost-share above authorized amounts** – The Director may approve a request for cost share above the authorized grant amount specified in the WQIA. Whenever an application exceeds the authorized grant amount, the Director shall consider the additional factors of comparative revenue capacity, revenue efforts and fiscal stress as reported by the Commission on Local Government. Staff will apply these criteria for grant requests above 75%:
   i. If ratio of current sewer cost to reasonable charge is **1.0 or above**, and locality's fiscal stress rating is "**above average**", then **cost-share = 80%**.
   ii. If ratio of current sewer cost to reasonable charge is **1.0 or above**, and locality's fiscal stress rating is "**high**", then **cost-share = 90%**.
   iii. If ratio of current sewer cost to reasonable charge is **1.25 or above**, then **cost-share = 90%**. (The COLG's fiscal stress rating may be used to judge the reasonableness of this cost-share level, acknowledging that Towns do not have separate ratings apart from the surrounding County.)

3. Determining Performance Requirements: WQIF agreements must include enforceable concentration-based performance requirements, which are to be based on the technology installed and expressed as annual average concentrations. This authorization appears in the WQIA (§ 10.1-2131. C. (i)), the Chesapeake Bay Watershed Nutrient Credit Exchange Program law (§62.1-44.19:18.B), and is consistent with provisions for nutrient limitations in discharge permits under SWCB Regulation (9 VAC 25-40-70.A.).

   a. Using general system descriptions and unit processes, establish performance expectations associated with the nutrient removal technology installed for Biological Nutrient Removal ("BNR"), Enhanced Nutrient Removal ("ENR"), and State-of-the-Art ("SOA") Nutrient Removal as follows:

Nutrient Removal Technology	System Description; Unit Processes	TN Effluent Conc. (mg/l; annual avg.)	TP Effluent Conc. (mg/l; annual avg.)
"BNR"	TN: Proven anoxic-aerobic technology (e.g., Orbal extended aeration, Schreiber, Bardenpho, MLE, SBR, VIP, Kruger, 3-5 stage activated sludge, IFAS). TP: biological phosphorus removal, or chemical precipitation.	8.0	1.0
"ENR"	TN: Proven BNR technology and supplemental carbon source (e.g., methanol). TP: chem. precipitation.	5.0	0.5
"SOA"	TN: Proven BNR technology and supplemental carbon source, with denitrification filters or other tertiary process. TP: chem. precipitation, with tertiary filtration.	3.0	0.3

The above TN and TP concentrations are anticipated for use with the described technologies, but may be subject to change on a case-by-case basis through negotiations with applicants who can demonstrate significant differing conditions or constraints at their plant. In addition, any allowable "buffer" authorized under the WQIA will be included in the agreement.

b. Review application compared to technology basis for required treatment at new/expanding plants, per the Nutrient Credit Exchange Law and the Point Source "Technology Regulation" (9 VAC 25-40).
c. Consider "phased" approaches to meet nutrient waste load allocations, either through progressive technology installation or reliance on flow projections below design capacity. The second possibility is acceptable if it is consistent with the Watershed General Permit now being drafted. Under a phased approach the performance requirements will be based on the technology installed.
d. Review any established performance requirements in light of future individual compliance plans for each significant discharger under the pending Watershed General Permit.

4. Eligibility of Unit Processes and other Budget Items in Scope of Work – CBP staff have developed a review checklist to determine eligibility of multi-purpose units and expanded tankage, where the eligibility is limited only to nutrient removal requirements. Unit processes largely dedicated to nutrient removal may be at or near 100% grant eligibility. Details on eligible unit process and/or associated grant percentages can be found in Appendix A. In addition, an overall eligible percentage of total construction cost will usually be applied to other fixed project costs (e.g., design, construction management, administration, inspection, etc.).

5. Basis for Calculating Monetary Assessment Figures included in Grant Agreement
   a. Calculation will consider all current and prior construction grant funds awarded for installation of nutrient removal technology. For projects that have previously been retrofitted to BNR treatment (or equivalent) using WQIF cost-share, the monetary assessment calculation will factor in the remaining useful service life of the system installed and deduct any years elapsed since the Certificate to Operate for the BNR project was issued.
   b. Technical Assistance grants awarded under the FY 2005-06 solicitations will not be included in the monetary assessment.
   c. Calculate nutrient removal performance relative to original baseline nutrient discharge levels, for projects where a plant was previously upgraded to BNR treatment under an earlier WQIF grant.

6. Methods or Information to Aid in Controlling Excessive Costs:
   a. Require compliance with the VA Public Procurement Act for purchase of all goods and services funded provides the greatest assurance that costs are fair and competitive.
   b. Analyze and compare estimated project costs to prevailing, actual bid costs for similar project types.
   c. Consult ENR index for anticipated unit costs of basic construction materials.
   d. Review preliminary engineering report for design assumptions of unit processes associated with nutrient removal technology; receive upfront justification and negotiate cost-share limitations for overly-conservative design/sizing of any unit processes.
   e. The WQIF Grant Guidelines allow nutrient removal technology systems to be sized to treat the flow in any reasonable and necessary expansion of the wastewater facility, which is generally limited to a 20-year design life. Details on the types of acceptable documentation and analyses, to substantiate expanded future design flow as reasonable and necessary, are described in Appendix B.

7. Coordination Among Agency Programs (WQIF, VRLF, OWE reviews)
   a. Utilize and update as necessary the MOU between VCWRLF and CBP for mutual review of payment requests, change orders, and RO staff performing

Interim Project Evaluations (site visits during construction for jointly funded projects).

b. Maintain close coordination between CBP and technology experts in OWE who have lead responsibilities to review and issue the certificate to construct and certificate to operate for proposed treatment systems. When needed, jointly review eligibility of proposed unit processes, based on design criteria, SCAT Regulations, the proposed technology, and general nutrient removal technology descriptions.
c. Maintain coordination between CBP, OWP, and DCR regarding any projects involving wastewater reuse for irrigation and resulting nutrient management planning requirements.

Appendix A
Grant Eligible Percentages by Unit Process

Unit Process	Eligible Percentage/Allowances
Influent Screening/Pumping	0%
Flow Equalization	If installation results in a peak factor of less than 2.5, the eligible percentage shall be equal to the percentage of the biological process dedicated to the anoxic volume or 50%, whichever is less.
Primary Clarification*	Where a new primary clarifier with chemical phosphorus removal is constructed, eligibility shall not exceed 20%.
Biological Basin/Reactor*	A) Where a VPDES permit requires year round nitrification, equivalent to an annual average TKN concentration of 6.0 mg/L or less (and respective to a proposed BNR technology) or an annual average ammonia-nitrogen concentration of 2.0 mg/L or less (and respective to a proposed ENR/SOA technology), the grant eligible percentage of the structure shall be determined by the volume associated with nutrient reduction (anaerobic/anoxic) zones. Mixers and baffles in these zones are 100% grant eligible. For any swing zones, the volume, mixers, and baffles shall be 50% grant eligible; aeration components in swing zones are not grant eligible. B) Where a VPDES permit includes a seasonal nitrification requirement equivalent to an annual average TKN concentration greater than 6.0 mg/L (and respective to a proposed BNR technology) or an annual average ammonia-nitrogen concentration greater than 2.0 mg/L (and respective to a proposed ENR/SOA technology), the nitrification volume, aeration process, and baffling associated with the nutrient reduction project shall be grant eligible, only at the existing design flow. C) For projects involving a flow expansion, the eligible percentage of the structure shall be determined by the volume associated with nutrient reduction (anaerobic/anoxic) zones. Mixers and baffles in these zones are 100% grant eligible. For any swing zones, the volume, mixers, and baffles shall be 50% grant eligible; aeration components in swing zones are not grant eligible.
Batch Process*	A) Where a VPDES permit requires year round nitrification, equivalent to an annual average TKN concentration of 6.0 mg/L or less (and respective to a proposed BNR technology) or an annual average ammonia-nitrogen concentration of 2.0 mg/L or less (and respective to a proposed ENR/SOA technology), the grant eligible percentage of the structure shall be determined by run cycle/phases associated with nutrient reduction (anaerobic/anoxic) mode. The volume and aeration system necessary to nitrify is considered ineligible because it would be required, regardless of nutrient reduction requirements. B) Where a VPDES permit includes a seasonal nitrification requirement equivalent to an annual average TKN concentration greater than 6.0 mg/L (and respective to a proposed BNR technology) or an annual average ammonia-nitrogen concentration greater than 2.0 mg/L (and respective to a proposed ENR/SOA technology), the nitrification volume and aeration process associated with the nutrient reduction project shall be grant eligible, only at the existing design flow. C) For projects involving a flow expansion, the grant eligible percentage shall be determined by the run cycle/phases associated with nutrient reduction (anaerobic/anoxic) mode. D) The post-equalization structure and pumping shall be grant eligible at the same percentage as the batch process.
Nitrified Recycle Pumping	100%
Sludge Fermentation for VFA Production	100%
Chemical Phosphorus Removal	100% of chemical storage tanks, metering pumps, and mixing systems.
Supplemental Carbon	100% of chemical storage tanks, metering pumps, and mixing systems.

Unit Process	Eligible Percentage/Allowances
Secondary clarification*:	A) Grant eligibility is limited to the certified design flow reflected in the VPDES permit; higher design capacities will result in prorated eligibility. B) The process shall qualify for cost share, where design capacity and permit flow are consistent and the surface overflow rate (SOR) is in the range of 800 to 1,200 GPD/ft^2 at peak flow. Projects proposing a more conservative SOR will be funded at a prorated level. C) The process shall qualify for cost share, where design capacity and permit flow are consistent and solids' loading is in the range of 1.4 to 1.8 lb/ft^2 /hr at peak flow. D) The overall eligible percentage for new construction shall not exceed 50% for the unit process; modifications to baffles/mechanism (not previously funded) shall be cost shared up to 100%, where the modification is necessary for nutrient removal capability.
Internal and RAS Pumping*	Case by case as "supported" for any nutrient removal capability.
Denitrification filters	100%
Tertiary Filtration	A) Where the VPDES permit includes a TSS limitation of 5.0 mg/L or less, the process shall not be eligible for cost share. B) Where the VPDES permit includes a TSS limitation greater than 5.0 mg/L but less than or equal to 10 mg/L, grant eligibility shall be 50%. C) Where the VPDES permit includes a TSS limitation greater than 10 mg/L, grant eligibility shall be 100%.
Microscreens for MBR	The eligible percentage shall be equal to the percentage of the biological reactor dedicated to the anoxic volume.
Membrane filtration	The eligible percentage shall be equal to the percentage of the biological reactor dedicated to the anoxic volume. Where there is no expansion and the process replaces both secondary clarifiers and tertiary filtration, eligibility shall not exceed 75%.
Solids handling*	Eligibility shall be on a case by case basis and only as "supported" for any nutrient removal capability. Where chemical phosphorus removal is designed into the secondary clarifier and flow expansion is not a part of the project, WAS pumping eligibility shall not exceed 40%.
Disinfection	0%
Post Aeration	0%, generally.
Effluent pumping	0%
Site Work, Electrical, Const. Engineering, etc.	Eligibility shall be determined on a case by case basis and derived by using the overall grant eligible costs as a percentage of the total construction costs.
Contingency	10% of the eligible project costs as estimated prior to bidding; will be reduced to 5% after receipt of bids.
Hydraulic/Peak Factor	A daily peak factor of *up to* three times the average flow will be considered acceptable in determining eligibility of individual unit processes. Beyond a daily peak factor of three, the grantee has the option to either: A) install influent flow equalization to reduce the peaking factor below three, or B) receive prorated eligibility of individual unit processes respective to the proposed peaking factor.

NOTE: *Any alternate request for cost share in a unit process must be supported by engineering calculations with respect to the volume, run time, etc., by which nutrient reduction requirements cause an increased need or size in the unit process.

Example documentation sources associated with determinations of grant eligibility for nutrient removal technology are as follows.

1. Design of Municipal Wastewater Treatment Plants, WEF Manual of Practice 8.
2. Wastewater Engineering, Metcalf and Eddy, 4th Edition.
3. Biological and Chemical Systems for Nutrient Removal, WEF Special Publication.
4. VA Sewage Collection and Treatment Regulations.
5. WQIF Grant Guidelines.
6. Modeling data and/or vendor supplied information.

Appendix B
Determination of Reasonable and Necessary Flow Expansion

I) Basic documentation:	A) For existing discharges, current average flow per housing unit or equivalent residential connection (ERC), as substantiated through the WQIF application and back-up documentation, should be utilized as the "not to exceed" flow in gallons per day (GPD). B) Because construction of new sanitary facilities necessitates the use of water conservation devices and new trunk sewers should be more watertight, these factors support utilizing a flow (as determined in I.A) less than 300 GPD/unit. C) In cases where more than one design flow tier appears in the VPDES permit, certified for operation on a seasonal basis, the lower dry-weather flow tier shall be used as the existing design flow of the facility.
II) Method to determine the average design flow supported for grant funds	A) The base flow or starting point for sizing the average daily flow (see 9 VAC 25-790-460, item C.3) shall be determined during a period of normal/reasonable precipitation and, at a minimum, shall include a consecutive 12 month period. B) A detailed break down of the number and location of anticipated and planned future residential connections for a 20-year useful service life must be provided as part of the documentation (not just a lump sum value). Tabular flow information resulting from the number of ERC times the current average flow per housing unit (as determined in I.A.) should be provided. If the flow increase is statistically consistent with historical population growth, the same percentage associated with population increase may be used in lieu of the detailed breakdown, but this will be determined on a case-by-case basis. C) Some infiltration and inflow (I&I) is expected and may be included in the average design flow, where it is considered cost-effective to convey and treat rather than remove. However, the WQIF should not fund capacity for excessive I&I in lieu of sewer repair and rehabilitation. Therefore, the aggregate amount of I&I to be included in the determination of the design flow for a 20 year useful service life should not exceed 20% of the existing average flow (II.A. above).
III) For expansions, WQIF will participate in minimal "speculative" design flow:	A) Speculative/projected flow should be limited to 15% of total documented design flow, or B) Consistent with WQIF efforts to set grant cost share percentages based on existing residential rates, financial conditions, and existing number of housing units, the portion of an expansion to serve industrial/commercial speculation may be considered ineligible and should be funded (§ 10.1-2129 item B. 3. iv.) by other sources. C) The Virginia Employment Commission (VEC) is given statutory authority (§ 60.2-113, item 5) to prepare official short and long-range population projections in the Commonwealth for use by the General Assembly and state agencies. DEQ staff will compare the applicant's flow projection documentation to VEC data, and may consult with VEC on the applicant's projected service population to assess reasonableness and consistency with their demographic information.